

Middle plateau.—1st, 2d, 3d, 5th to 16th, 18th to 26th, 28th to 31st.

Northern plateau.—1st, 2d, 3d, 5th, 6th, 8th, 10th, 11th, 12th, 14th, 17th to 20th, 24th to 30th.

North Pacific coast region.—1st to 8th, 10th, 11th, 14th, 17th, 18th, 19th, 23d to 30th.

Middle Pacific coast region.—1st, 2d, 3d, 6th to 12th, 15th, 16th, 18th, 19th, 20th, 22d, 25th.

South Pacific coast region.—10th, 11th, 12th, 19th, 20th, 21st.

ICE.

Ice formed in the southern parts of the country during the month, as follows:

Raleigh, North Carolina, 3d, 11th.

Birmingham, Alabama, 10th, 11th.

Stateburg, South Carolina, 11th.

Savannah and Milledgeville, Georgia, 11th, 24th.

Mobile, Alabama, 11th.

Los Angeles, California, 19th.

San Carlos, Arizona, 20th.

Lenoir, North Carolina, 23d.

Chapel Hill, North Carolina, 24th.

Palestine and Abilene, Texas, 30th.

Liberty Hill, Louisiana, 31st.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada for March, 1886, as determined from the reports from more than seven hundred stations, is exhibited on chart iii.

In the following table are shown, for the several geographical districts, the normal precipitation for March; the average for March, 1886, and the excess or deficiency as compared with the normal:

Average precipitation for March.

Districts.	Average for March, Signal-Service observations.		Comparison of March, 1886, with the average for several years.
	For several years.	For 1886.	
	Inches.	Inches.	Inches.
New England.....	4.22	3.73	-0.49
Middle Atlantic States.....	3.98	3.50	-0.48
South Atlantic States.....	5.11	5.66	+0.55
Florida Peninsula.....	2.39	7.09	+4.70
Eastern Gulf States.....	6.32	10.47	+4.15
Western Gulf States.....	3.93	4.51	+0.58
Rio Grande Valley.....	1.14	1.33	+0.19
Tennessee.....	5.80	7.92	+2.12
Ohio Valley.....	3.67	3.02	-0.65
Lower lake region.....	2.84	2.78	-0.06
Upper lake region.....	2.18	2.78	+0.60
Extreme northwest.....	1.03	0.77	-0.26
Upper Mississippi Valley.....	2.33	2.19	-0.14
Missouri Valley.....	1.42	1.66	+0.24
Northern slope.....	0.76	0.96	+0.20
Middle slope.....	0.88	1.11	+0.23
Southern slope.....	1.05	0.60	-0.45
Southern plateau.....	1.13	0.99	-0.14
Middle plateau.....	1.34	1.71	+0.37
North Pacific coast region.....	4.94	4.16	-0.78
Middle Pacific coast region.....	2.86	2.04	-0.82
South Pacific coast region.....	1.52	2.19	+0.67

In eastern Tennessee, the east Gulf states, and Florida, the rainfall was largely in excess of the average, being due principally to the remarkably heavy rains which fell during the closing days of the month. In Florida the rainfall was more than double the average, and in the east Gulf states the excess amounted to about two-thirds of the average. In Tennessee the rainfall exceeded the average by more than two inches, although there was a marked deficiency in the western part of the state. In the other districts no marked departures from the average rainfall are shown.

Concerning the unusually heavy rains of the last days of the month, the following notes from observers' reports are given:

Atlanta, Georgia: the rainfall during March, 11.16 inches, is the largest amount which has fallen at this station in March since 1880; of the total for the month, about ten inches fell from the 28th to 31st.

Knoxville, Tennessee: during the thirty-nine and one-half hours ending at

8.38 a. m. of the 31st, 6.56 inches of rain fell; this is the heaviest fall of rain that has occurred since February 24-25th, 1875, when 8.10 inches fell.

Chattanooga, Tennessee: on the 30th 5.95 inches of rain fell, this amount being the largest recorded in the same length of time since the establishment of this station in 1879.

Mr. J. W. A. Wright, voluntary observer at Greensborough, Hale county, Alabama, reports that the rainfall (11.72) for March exceeded by 1.72 inches the largest quantity previously recorded at that place in March; of the total rainfall for the month, more than eight inches fell in less than sixty consecutive hours, from the 28th to 31st.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows, for certain stations, as reported by voluntary observers, the average precipitation for the month of March for a series of years; the precipitation for March, 1886; and the departures from the average:

Station.	County.	Average precipitation for March.	Number of years.	Precipitation for March, 1886.	Departure.
		Inches.		Inches.	Inches.
<i>Arkansas.</i>					
Lead Hill.....	Boone.....	3.64	4	4.87	+ 1.23
<i>California.</i>					
Fall Brook.....	San Diego.....	2.79	7	4.70	+ 1.91
Sacramento.....	Sacramento.....	2.77	12	2.33	- 0.44
<i>Connecticut.</i>					
Hartford.....	Hartford.....	4.05	15	3.51	- 0.54
Middletown.....	Middlesex.....	4.41	28	3.44	- 0.97
New Haven.....	New Haven.....	4.77	14	3.20	- 1.57
Wallingford.....	New Haven.....	4.63	28	3.67	- 0.96
<i>Dakota.</i>					
Webster.....	Day.....	2.60	3	2.02	- 0.58
<i>Illinois.</i>					
Anna.....	Union.....	3.96	11	4.05	+ 0.09
Mattoon.....	Coles.....	3.44	6	3.55	+ 0.11
Riley.....	McHenry.....	2.53	25	3.08	+ 0.55
Sycamore.....	De Kalb.....	2.38	5	3.85	+ 1.47
<i>Indiana.</i>					
Lafayette.....	Tippecanoe.....	2.37	7	2.04	- 0.33
Vevy.....	Switzerland.....	4.03	21	2.18	- 1.85
<i>Iowa.</i>					
Cresco.....	Howard.....	1.96	10	2.04	+ 0.08
Monticello.....	Jones.....	2.48	32	3.50	+ 1.02
<i>Kansas.</i>					
Independence.....	Montgomery.....	2.09	14	1.68	- 0.41
Wellington.....	Sumner.....	1.36	8	1.59	+ 0.23
Yates Centre.....	Woodson.....	1.29	6	1.83	+ 0.54
<i>Maine.</i>					
Gardiner.....	Kennebec.....	3.88	48	3.90	+ 0.02
Orono.....	Penobscot.....	3.95	18	2.87	- 1.08
<i>Maryland.</i>					
Fallston.....	Harford.....	4.01	16	6.03	+ 2.02
<i>Massachusetts.</i>					
Amherst.....	Hampshire.....	3.39	51	3.52	+ 0.13
Cambridge.....	Middlesex.....	3.79	45	3.53	- 0.26
Chestnut Hill.....	Middlesex.....	4.24	11	3.55	- 0.69
Frammingham.....	Middlesex.....	4.32	12	3.59	- 0.73
Lake Cochituate.....	Middlesex.....	4.12	35	3.46	- 0.66
Lowell.....	Middlesex.....	3.47	61	3.26	- 0.21
Lynn.....	Essex.....	4.40	12	3.70	- 0.70
Mystic Lake.....	Middlesex.....	4.18	11	3.96	- 0.22
New Bedford.....	Bristol.....	4.21	73	5.09	+ 0.88
Somerset.....	Bristol.....	4.59	16	4.09	- 0.50
Springfield.....	Hampden.....	3.61	39	3.76	+ 0.15
Waltham.....	Middlesex.....	3.42	62	3.57	+ 0.15
Williamstown.....	Berkshire.....	3.08	22	5.01	+ 1.93
Worcester.....	Worcester.....	3.67	46	3.57	- 0.10
<i>Nevada.</i>					
Carson City.....	Ormsby.....	1.83	7	1.60	- 0.23
<i>New Brunswick.</i>					
Saint John.....	Saint John.....	4.82	26	3.16	- 1.66
<i>New Hampshire.</i>					
Concord.....	Merrimac.....	2.95	31	3.27	+ 0.32
Hanover.....	Grafton.....	2.12	19	2.13	+ 0.01
<i>New Jersey.</i>					
South Orange.....	Essex.....	3.68	16	3.47	- 0.21
<i>New York.</i>					
North Volney.....	Oswego.....	3.06	14	3.25	+ 0.19
Palermo.....	Oswego.....	2.82	33	1.68	- 1.14
Plattsburg Barracks.....	Clinton.....	2.27	17	1.42	- 0.85
<i>Ohio.</i>					
Wauseon.....	Fulton.....	3.10	13	1.56	- 1.54
<i>Pennsylvania.</i>					
Dyberry.....	Wayne.....	3.05	18	3.51	+ 0.46
Kirkwood.....	Kershaw.....	3.28	21	3.40	+ 0.12
Stateburg.....	Sumpter.....	4.06	6	4.40	+ 0.34
<i>Texas.</i>					
New Ulm.....	Austin.....	5.34	14	4.75	- 0.59
<i>Vermont.</i>					
Lunenburg.....	Essex.....	3.34	38	0.90	- 2.44
Strafford.....	Orange.....	3.28	12	2.20	- 1.08
<i>Virginia.</i>					
Bird's Nest.....	Northampton.....	4.79	18	2.85	- 1.94
Dale Enterprise.....	Rockingham.....	2.92	6	6.86	+ 3.94
Variety Mills.....	Nelson.....	3.90	7	6.16	+ 2.26
Wytheville.....	Wythe.....	3.71	22	5.31	+ 1.60
<i>West Virginia.</i>					
Helvetia.....	Randolph.....	4.75	10	4.46	- 0.29

* From the "Bulletin of the New England Meteorological Society."

Atmospheric conditions

The following notes in connection with this subject are reported by voluntary observers:

California.—Fall Brook, San Diego county: the greatest precipitation for any March for a period of ten years was 10.90, in 1884, and the least, 0.29, in 1879 and 1885.

Illinois.—Mattoon, Coles county: the total snowfall for March, 1886, 10.00, is 5.94 above the average for six years.

Indiana.—Vevay, Switzerland county: the total snowfall for March, 1886, 0.02, is 2.74 below the average for the past twenty-one years.

Iowa.—Cresco, Howard county: the total snowfall for March, 1886, 19.50, is 13.50 above the average for the past ten years.

Monticello, Jones county: the greatest precipitation that has occurred in any March for a period of thirty-two years was 6.54, in 1877, and the least, 0.07, in 1869. The total snowfall for March, 1886, 19.90, is 12.67 above the average for thirty-two years; the greatest snowfall in any March was 26.60, in 1876; no snow fell in March, 1877.

Kansas.—Yates Centre, Woodson county: the snowfall for the five months ending March 31st was 22.80, being the largest amount in the past seven years; for the same time the least was 3.00, in 1879-'80.

Wellington, Sumner county: the total snowfall for March, 1886, 4.5, is 2.0 above the average for eight years.

Maine.—Gardiner, Kennebec county: the total snowfall for the past winter was 79.5, being a deficiency of about 4.0. The largest snowfall in any winter for the past forty-eight years was 146.0, in 1842-'43, and the least, 31.0, in 1837-'38. The total precipitation for the quarter ending March 31, 1886, was 17.76, being 7.0 in excess of the average.

Maryland.—Fallston, Harford county: the greatest precipitation that has occurred in any March for the past sixteen years was 7.53, in 1871, and the least, 1.44, in 1885.

Massachusetts.—Worcester, Worcester county: the precipitation during March, 1886, was about normal, although the snowfall was far below the average of the preceding forty-five years.

New York.—Palermo, Oswego county: the total snowfall for March, 1886, 3.75, is 10.0 below the average for thirty-three years. The greatest snowfall that has occurred in any March during this period was 37.0, in 1870, and the least, 2.50, in 1882.

Ohio.—Wauseon, Fulton county: the total snowfall for March, 7.3, is 5.0 below the average.

Pennsylvania.—Dyberry, Wayne county: the snowfall for March, 1886, is below the normal, the average for a period of thirty-two years being 14.7.

Texas.—New Ulm, Austin county: the greatest precipitation that has occurred in any March during the past fourteen years was 13.13, in 1883, and the least, 2.14, in 1885.

Virginia.—Variety Mills, Nelson county: the greatest precipitation for March during the past seven years was 8.78, in 1884, and the least, 0.63, in 1879.

The following are some of the most marked departures from normal precipitation at Signal Service stations:

Above normal.		Below normal.	
	Inches.		Inches.
Pensacola, Florida.....	8.97	Cape Henry, Virginia.....	4.13
Cedar Keys, Florida.....	8.87	Hatteras, North Carolina.....	3.32
Mobile, Alabama.....	6.84	Eastport, Maine.....	3.06
Chattanooga, Tennessee.....	6.51	Memphis, Tennessee.....	2.95
Sanford, Florida.....	5.82	Nashville, Tennessee.....	2.49
Knoxville, Tennessee.....	5.41	Norfolk, Virginia.....	2.22
Atlanta, Georgia.....	4.41	New Haven, Connecticut.....	1.69
Jacksonville, Florida.....	3.47	Boston, Massachusetts.....	1.51

SNOW.

Snow fell in the various districts during the month, as follows:

New England.—1st, 2d, 3d, 5th, 6th, 7th, 8th to 23d, 25th to 31st.

Middle Atlantic states.—1st, 2d, 3d, 5th, 6th, 8th to 14th, 19th, 21st, 22d, 23d, 25th to 31st.

South Atlantic states.—9th, 10th, 23d, 27th.

East Gulf states.—Greensborough, Alabama, 10th; Birmingham, Alabama, 31st.

West Gulf states.—Lead Hill, Arkansas, 7th, 9th, 20th, 30th, 31st; Fort Smith, Arkansas, 29th; Little Rock, Arkansas, 30th.

Tennessee.—9th, 10th, 29th, 30th, 31st.

Ohio Valley.—1st, 4th to 14th, 21st, 22d, 23d, 25th to 28th, 30th, 31st.

Lower lake region.—1st to 5th, 7th to 16th, 19th to 24th, 31st.

Upper lake region.—1st, 2d, 5th, 7th to 23d, 25th to 31st.

Extreme northwest.—1st to 5th, 7th, 8th, 10th to 14th, 16th to 19th, 26th to 29th, 31st.

Table of excessive and greatest monthly precipitation for March, 1886.

Station.	Specially heavy.		Largest monthly.	Amount.	Station.	Specially heavy.		Largest monthly.	Amount.
	Date.	Amt.				Date.	Amt.		
Alabama.					Maryland—Con.				
Newton.....	4	2.20	18.05		Fort McHenry.....	29, 30, 31	3.80		
Do.....	20	3.00			Baltimore.....	30, 31	2.05		
Do.....	27, 28	4.70			Massachusetts.				
Do.....	30	3.20			New Bedford.....	19, 20	2.85		
Mobile.....	4	2.29	14.62		Michigan.				
Do.....	28	2.00			Harrisville.....	19, 20	2.70		
Do.....	30	3.93			Manistiquo.....	20	2.52		
Centre.....	26 to 30	12.15	13.90		Alpena.....	21	2.15		
Valley Head.....	27	2.24	12.78		Mississippi.				
Do.....	29, 30	6.94			Vicksburg.....	27, 28	2.48	6.07	
Lineville.....	29, 30	11.00	12.30		Nebraska.				
Bermuda.....	20	2.20	12.00		Fremont.....	27, 28	2.00		
Do.....	30	4.50			New Jersey.				
Grove Hill.....	29, 30	5.20	11.90		Egg Harbor City.....	27	2.38		
Russellville.....	29	9.75	11.74		North Carolina.				
Greensborough.....	26 to 31	9.28	11.72		Flat Rock.....	20, 21	2.05	8.64	
Carrollton.....	27 to 30	10.45	11.60		Do.....	29, 30	4.80		
Birmingham.....	26, 27	2.16	11.51		Charlotte.....	29, 30, 31	3.80	6.39	
Do.....	29, 30, 31	7.81			Chapel Hill.....	29, 30, 31	4.25		
Tuscaloosa.....	27 to 30	9.33	11.31		Weldon.....	29, 30, 31	2.98		
Marion.....	29, 30	7.25	11.19		Wake Forest.....	29, 30, 31	2.99		
Springfield.....	29, 30	7.63	10.90		Raleigh.....	29, 30, 31	3.20		
Selma.....	29, 30	7.45	10.19		Lincolnton.....	29, 30, 31	3.80		
Jacksonville.....	28, 29, 30	7.50	10.00		Williamston.....	31	3.37		
Gadsden.....	29, 30	8.10	9.30		Smithville.....	31	2.06		
Evergreen.....	30	2.92	8.58		Oregon.				
Auburn.....	28, 29, 30	5.48	8.03		Bandon.....	22	2.45		
Mount Willing.....	30	3.50	8.49		Pennsylvania.				
Eufaula.....	30	2.85	7.94		Westborough.....	29, 30, 31	6.05	8.25	
Mt. Vernon B'ks.....	27, 28	2.34	7.59		Mahanoy Plane.....	28 to 31	5.25	7.59	
Oswichee.....	29, 30	2.32	7.45		Rhode Island.				
Trinity.....	29, 30	4.70	7.05		Narragansett P'r.....	20, 21	2.50		
Montgomery.....	29, 30	3.67	6.86		South Carolina.				
Arizona.					Spartanburg.....	26 to 31	4.60	7.07	
Prescott.....	1, 2	2.41			Pacolet.....	19, 20	2.28	6.43	
Arkansas.					Do.....	29, 30	3.34		
Lead Hill.....	25, 26	2.20			Stateburg.....	29, 30, 31	3.60		
California.					Aiken.....	29, 30	3.64		
Summit.....			7.80		Tennessee.				
Cisco.....			7.40		Chattanooga.....	29, 30	9.15	12.77	
Emigrant Gap.....			6.90		Grief.....	27	2.07	11.33	
Blue Lake.....			6.51		Do.....	29, 30, 31	7.50		
Marietta.....	1, 2, 3	3.87			Knoxville.....	30	5.56	11.15	
Fall Brook.....	1, 2	2.78			Parkersville.....	29, 30	7.09	10.72	
Connecticut.					Andersonville.....	20	2.25	10.17	
New London.....	20, 21	2.24			Do.....	20, 30	6.00		
Dist. of Columbia.					Fostoria.....	25	2.00	9.40	
Washington City.....	30, 31	3.12	6.41		Do.....	30, 31	6.40		
Florida.					Paris.....	26	3.60	9.38	
Pensacola.....	4	2.60	13.37		Do.....	28, 29	3.80		
Do.....	20	2.29			Farmingdale.....	29, 30	3.00	8.94	
Do.....	27, 28	4.01			Jacksonborough.....	27, 28	2.20	8.20	
Archer.....	4, 5	2.85	12.33		Do.....	30, 31	3.45		
Do.....	12, 13	3.25			Howell.....	29, 30	4.49	8.12	
Cedar Keys.....	4, 5	2.26	12.14		Careyville.....	29, 30	5.00	7.45	
Do.....	12, 13	2.89			Manchester.....	29, 30	3.62	7.29	
Do.....	16	2.47			Rogersville.....	30	3.10	7.08	
Tallahassee.....			9.79		Beach Grove.....	29, 30	3.45	6.92	
Sanford.....	4, 5	2.39	8.17		Riddleton.....	29, 30	2.94	6.71	
Do.....	15, 16	2.23			Waynesborough.....	29, 30	5.00	6.70	
Ft. St. Augustine.....	4, 5	2.35	7.61		Cookville.....	30	2.00	6.64	
Jacksonville.....	4, 5	2.64	6.74		Greenville.....	29, 30	3.60	6.53	
Limona.....	20, 21	2.99			Nashville.....	29, 30	2.48		
Fort Meade.....	21	4.00			Texas.				
Georgia.					Austin.....	2, 3	2.05		
Dahlonega.....			13.47		Indianola.....	2, 3	2.14		
Atlanta.....	29, 30	9.59	11.16		Virginia.				
Athens.....	28 to 31	8.50	9.74		Dale Enterprise.....	26, 27	2.25	6.68	
Quitman.....			9.10		Do.....	29, 30, 31	3.58		
Forsyth.....	28 to 31	5.85	8.67		Accotink.....	29, 30, 31	4.00	6.65	
Augusta.....	29	4.84	7.42		Fort Myer.....	31	2.12	6.48	
Milledgeville.....	29	2.80			Variety Mills.....	29, 30, 31	3.55	6.16	
Iowa.					Lynchburg.....	30, 31	2.60		
Clinton.....	20 to 21	2.61			Washington Ter.				
Louisiana.					Nash Bay.....	12, 13	2.30	12.90	
New Orleans.....	3, 4	2.50	8.41		Do.....	19 to 23	5.40		
Do.....	29, 30	2.70			Tatoosh Island.....			10.89	
Luling.....	3, 4	2.15	6.94		Fort Canby.....			8.25	
Shreveport.....	25	2.65	6.32		Pyshet.....			7.91	
Grand Coteau.....	2, 3	2.62			Astoria.....			7.23	
Maryland.					Wisconsin.				
Fallston.....	27 to 31	4.65	6.03		Madison.....	20, 21	2.50		
Emmitsburg.....	29, 30, 31	3.47							

Upper Mississippi valley.—1st, 4th to 15th, 20th, 21st, 26th to 31st.

Missouri Valley.—1st to 9th, 11th to 15th, 17th to 21st, 26th to 31st.

Northern slope.—1st to 21st, 23d, 25th to 31st.

Middle slope.—1st to 11th, 14th, 17th to 20th, 25th to 30th.

Southern slope.—Abilene and Fort Davis, Texas, Fort Sill, Indian Territory, and Fort Stanton, New Mexico, 29th.

Southern plateau.—1st, 2d, 3d, 10th, 11th, 14th, 18th, 19th, 28th, 29th.

Middle plateau.—1st to 19th, 24th to 27th, 29th, 30th, 31st.

Northern plateau.—2d to 10th, 13th to 18th, 23d, 26th, 31st.

North Pacific coast region.—15th, 16th, 17th, 23d.

Middle Pacific coast region.—2d, 3d, 4th, 15th, 16th, 17th.

Snow storms of unusual severity were reported, as follows: Saint Paul, Minnesota: a heavy snow storm occurred on the 20th, causing the stoppage of street cars and greatly delaying railroad traffic.

Riley, McHenry county, Illinois: the snowfall of the 31st was the greatest (so late in the season) in this county for the past fifty-one years.

North Platte, Nebraska: a severe snow storm occurred on the 27-28th, accompanied by a cold north wind, which drifted the snow badly; trains on the Union Pacific Railroad were delayed, and considerable loss to cattle was reported by stockmen.

LARGEST MONTHLY SNOWFALLS.

[Expressed in inches and tenths.]

Monthly snowfalls of three inches or more were reported from the various states and territories during the month, as follows:

Arizona.—Prescott, 16.2.

California.—Summit, 78; Cisco, 74; Emigrant Gap, 69; Towles, 51; Boca, 44; Truckee, 29; Tehichipa, 26; Susanville, 16.5; Fort Bidwell, 13.7; Kerne, 11; Blue Lake, 9.5; Colfax and Ravenna, 7.

Colorado.—Pike's Peak, 41.8; Denver, 21.8; Colorado Springs, 6; Pueblo, 4.6.

Connecticut.—North Colebrook, 22; Norfolk, 17; Canton, 9; Collinsville, 5; New London, 4.2; Wallingford, 3.5; Bethel, 3.

Dakota.—Richardton, 26; Deadwood, 25.1; Vermillion, 25; Yankton, 23.6; Bismarek, 10.4; Fort Totten, 8.4; Fort Buford, 7.9; Webster, 7.2; Huron, 4.7.

Illinois.—Riley, 18.5; Rockford, 17.9; Sycamore and Pekin, 15.2; Windsor, 13.8; Geneseo, 13.2; Charleston, 12.4; Beardstown, 12; Mattoon, 10; Bunker Hill, 8.4; Springfield, 5.7; Anna, 5.4.

Indiana.—Connersville, 9.5; Princeton, 8; Sunman, 7.7; Greencastle, 7.4; La Grange, 6.8; Spiceland, 6.3; Mauzy, 6; Farmland, 4.5; Monticello, 4.4; Lafayette and Worthington, 4.2; Knightstown, 3.5; Greenfield, 3.2; Blue Lick, 3.1; Guilford, Fort Wayne, and Marengo, 3.

Iowa.—Clinton, 28; Monticello, 19.9; Cresco, 19.5; Muscatine, 19; Davenport and Fort Madison, 18.5; Keokuk, 16.5; Des Moines a, 16.3; Cedar Rapids, 14.3; Des Moines b, 13; Independence, 12.8; Oskaloosa a, 9.9; Oskaloosa b, 7.

Kansas.—Concordia, 15.4; Wakefield, 12; Westmoreland, 10.5; Fort Scott, 10; Atchison, 9.6; Allison, 8.9; El Dorado, 7.1; Manhattan b, 6.5; Wyandotte and Sterling, 5.5; Topeka, 5; Ninnescah, Wellington, and Manhattan a, 4.5; Leavenworth, 4.4; Yates Center, 3.8; West Leavenworth, 3.4; Elk Falls, 3.

Maine.—Gardiner, 22.5; Orono, 22; Cornish and Belfast, 19; Solon, 18; Mayfield, 17; Bridgeton, 15.5; Fairfield, 12; Portland, 9.5; Bar Harbor, 9; Eastport, 6.6.

Massachusetts.—Rowe, 15.7; Williamstown, 13; Gilbertville, 10.5; Dudley, 9.8; Beverly Farms, 9; Amherst a and Concord, 8.5; Northfield, 8.2; Fitchburg, 7.8; South Hingham and Lowell, 7; Newburyport and Blue Hill Observatory, 6.8; Blue Hill, 6.3; Nantucket and Westvale, 6; Salem, 5.5; Lawrence, 5; Westborough and Taunton a, 4.8; Boston, 4.5; Worcester, 4.4; Quincy, 4.3; Leominster, Williamstown, Taunton b, and Princeton, 4; Provincetown, 3.8; Fall River, 3.5; Amherst b, New Bedford, and Randolph, 3.

Michigan.—Manistique, 26; Alpena, 23.2; Marquette, 15.6; Traverse City, 13.5; Escanaba, 12.4; Lansing, 10.5; Mackinaw City, 9.8; Hudson, 9.2; Thornville, 7.5; East Saginaw, 7.4; Mottville, 6.5; Detroit, 6; Port Huron, 3.9.

Minnesota.—Northfield, 20.6; Albert Lea, 19; Spring Valley, 14; Mankato, 12.6; Duluth, 11.7; Red Wing, 11.6; Preston, 10.8; Saint Paul, 10.4; Grand Forks, 9.3; Winona, 8.5; Saint Vincent, 3.8.

Montana.—Fort Assinaboine, 16.3; Fort Maginnis, 15.4; Fort Custer, 12.5; Helena, 9.1; Fort Benton, 6.8; Fort Shaw, 6; Poplar River, 3.

Missouri.—Centreville, 8.7; Pierce City, 5.

Nebraska.—Stromsburg, 42; Central City, 41; Yutan, 37.2; Genoa, 34.6; De Soto, 30.4; Marquette, 29.4; Beaver Creek, 29; Weeping Water, 26.8; Fairbury, 24; Ashland, 22; North Platte, 21.6; Fremont, 21.4; Brownville, 20.2; York, 20; Valentine, 17.8; Stockham, 17; Hay Springs, 16.5; De Witt, 13; Syracuse, 12; West Point, 10; Dawson, 7; Omaha, 3.5.

Nevada.—Carson City, 16.5; Winnemucca, 16.3; Toana, 14.5; Otego, 14.2; Carlin, 12.2; Halleck, 10; Hawthorn and Wadsworth, 8.5; Tacoma, 8; Palisade, 7.5; Reno, 7; Elko, 6; Golconda, 4.5; Humboldt, 4; Beowawe and Wells, 3.5; Brown's, 3.2; Hot Springs, 3.

New Brunswick.—Saint John, 25; Parker's Ridge, 10.

New Hampshire.—Mount Washington, 22.2; Berlin Mills, 19; Concord, 12; Littleton, 10.5; Walpole, 10.2; Manchester a, 10; Nashua and Manchester b, 8; Hanover, 6.7.

New Mexico.—Galinas Spring, 6, Santa Fé, 5; Fort Stanton, 4; Puerto de Luna, 3.6.

New York.—Auburn, 14; Buffalo, 13.1; Ithaca, 9.9; Humphrey, 9.2; Menand Station, 8.2; Albany, 8; Rochester, 6.5; Le Roy, 4.7; Mountainville and Palermo, 3.8; Coopers-town, 3.5.

Ohio.—Hiram, 8; Cleveland and Wauseon, 7.3; Garrettsville, 6; Toledo, 5.1; Ruggles and Tiffin, 5; Napoleon, 4.6; Fostoria, 4.5; North Lewisburg, 4; West Milton, 3.5.

Oregon.—Eola, 3.

Pennsylvania.—Grampian Hills, 9; Mahanoy Plane, 7; Erie, 6.8; Bloomington, 5; Dyberry and Zionsville, 4; Franklin, 3.4; Wellsborough and Quakertown, 3.

Rhode Island.—Olneyville, 4.2; Woonsocket, 4; Providence and Lonsdale, 2.8; Block Island, 3.2.

Utah.—Corinne, 21.5; Ogden, 18.2; Salt Lake City, 13.2; Blue Creek, 8; Terrace, 5.

Vermont.—Stowe, 31; Strafford, 15; Newport, 14.5; Jacksonsville, 12.8; Marlborough, 11.3; Chelsea, 10.8; Dorset, 10.4; Vernon, 10; Lunenburg, 9; Windsor and Brattleborough, 7.8; Burlington, 7; Poultney, 6.8; Post Mills, 5; Townshend, 4.5.

West Virginia.—Helvetia, 12.5.

Wisconsin.—Madison, 27.1; Embarras, 21.8; Beloit, 18.5; Neillsville, 16.5; Milwaukee, 16.1; Manitowoc, 8; La Crosse and Prairie du Chien, 7.5.

Wyoming.—Fort Bridger, 13.6.

DEPTH OF UNMELTED SNOW ON GROUND AT END OF MONTH.

[Expressed in inches and tenths.]

Colorado.—Pike's Peak, 12.

Connecticut.—North Colebrook, 3.

Dakota.—Vermillion, 11; Yankton, 7.2; Fort Totten, 0.5.

Illinois.—Riley, 15; Rockford, 12; Sycamore, 10.5; Windsor and Charleston, 8; Bunker Hill and South Evanston, 6; Mattoon, 5; Bloomington, 4.5; Pekin, Beardstown, and Peoria, 4; Springfield, 2; Chicago and Anna, 1.

Indiana.—Greencastle, 2.5; Laconia, 2; La Grange, 1.5; Spiceland, 1.3; Sunman, 1; Knightstown and Indianapolis, 0.8; Jeffersonville, trace.

Iowa.—Clinton and Davenport, 10; Muscatine, 5; Monticello, 4; Keokuk, 2.7; Cresco and Des Moines, 1 to 3; Oskaloosa a and Oskaloosa b, 1; Manchester, drifts; Independence and Cedar Rapids, trace.

Kansas.—Fort Scott and Atchison, 1; Concordia, 0.5; Salina, trace.

Kentucky.—Louisville, 0.5; Frankfort, trace.

Maine.—Kent's Hill, 24; Gardiner, 22; Orono and Buckfield, 12; Eastport, 0.3.

Michigan.—Marquette, 30; Manistique, 13; Traverse City, 10; Mackinaw City, 5; Escanaba, 3.9; Alpena, 3; Thornville, 1; Grand Haven, trace.

Minnesota.—Northfield, 3; Saint Vincent, 0.5.

Missouri.—Saint Louis, 1; Pierce City, trace.

Nebraska.—Genoa, 8; Marquette, 5; Fremont, Yutan, and Fairbury, 3; Stockham, 2; Omaha, 0.5; De Soto, 0.4; Hay Springs, trace.

Pennsylvania.—Dyberry, trace.
Vermont.—Stowe, 5; Strafford, 3; Post Mills, 1.
Washington Territory.—Spokane Falls, 0.3.
Wisconsin.—Embarras, 14; Madison, 13.5; Milwaukee, 6; Neillsville, 1 to 5; La Crosse, 0.5.

HAIL.

Fall Brook, San Diego county, California: a heavy fall of hail occurred at 8 a. m. of the 18th, lasting several minutes. The stones, which were the size of peas, fell in sufficient quantity to whiten the ground and remained unmelted for half an hour. Hail showers also occurred at 8.30 and 11.30 a. m. and 2.30 p. m. of the same day.

Birmingham, Jefferson county, Alabama: a violent hail storm occurred at 3.30 p. m. of the 29th, lasting five minutes. The stones, which were of clear ice, were generally spherical in shape and of the size of chestnuts. Considerable damage was done to gardens, skylights, etc.

SLEET.

Sleet occurred in the various states and territories during the month, as follows:

Alabama.—Montgomery, 4th; Greensborough, 31st.
Connecticut.—Bethel, 19th; New Haven, 21st.
Dakota.—Fort Buford, 12th, 15th.
Georgia.—Quitman, 13th.
Idaho.—Boisé City, 16th, 26th.
Indiana.—Indianapolis, 5th, 13th; Vevay, 21st.
Iowa.—Independence, 11th; Davenport, 11th, 12th, 20th; Cedar Rapids, 14th; Oskaloosa, 28th.
Kansas.—Ottawa, 1st; Independence, 2d; El Dorado, 2d, 24th, 25th; Fort Riley, 4th; Yates Centre, 20th; Ninnescah, 28th.
Maine.—Portland, 12th, 16th, 20th, 21st, 29th, 30th; Eastport, 15th, 16th, 21st, 22d.
Massachusetts.—Princeton, 21st.
Michigan.—Grand Haven, 15th, 28th; Escanaba, 17th, 20th, 21st; Marquette, 19th.
Minnesota.—Saint Paul, 19th.
Missouri.—Lamar, 25th, 29th.
Nebraska.—Brownville, 4th; Valentine, 18th.
New Jersey.—Dover, 12th, 22d, 23d, 27th.
New York.—Le Roy, 12th; Setauket, 27th; Fort Columbus, 28th.
Ohio.—Cleveland, 12th, 21st; Columbus, 21st.
Pennsylvania.—Easton, 18th to 21st.
South Carolina.—Spartanburg, 10th.
Tennessee.—Memphis, 4th.
Texas.—Abilene and El Paso, 29th.
Vermont.—Poultney, 8th.
Virginia.—Fort Myer, 12th.
Washington Territory.—Olympia, 7th, 15th; Tatoosh Island, 15th; Walla Walla, 19th, 24th, 31st; Pysht, 24th, 25th; Fort Spokane, 31st.
Wisconsin.—La Crosse and Madison, 20th.

TEMPERATURE OF WATER.

Observations were interrupted by ice throughout the month at the following stations: Duluth, Minnesota; Escanaba, Marquette, Mackinaw City, and Alpena, Michigan; Milwaukee, Wisconsin. Observations were also interrupted by ice at Chicago, Illinois, from the 1st to 11th; Detroit, Michigan, 1st to 10th, 13th, 14th, 15th; Toledo, Ohio, 1st to 14th; Sandusky, Ohio, 1st to 20th; Cleveland, Ohio, 1st to 14th, 22d, 23d, 27th, 28th; Buffalo, New York, 1st to 23d. Observations were suspended during the month at Indianola, Texas, and at San Francisco, California, from the 22d to 31st.

The following table shows the highest and lowest temperatures of water observed at the several stations; the monthly ranges of water temperature; the average depth at which the observations were made; and the mean temperature of the air:

Temperature of water for March, 1886.

Station.	Temperature at bottom.		Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	Max.	Min.			
Atlantic City, New Jersey	43.0	33.9	9.1	8.9	34.1
Alpena, Michigan*	61.0	47.9	13.1	10.1	54.2
Augusta, Georgia	45.5	33.2	12.3	10.0	41.6
Baltimore, Maryland	38.1	28.1	10.0	8.3	34.2
Block Island, Rhode Island	40.1	29.3	10.8	20.0	33.7
Boston, Massachusetts	39.6	33.5	6.1	10.0	31.0
Buffalo, New York*	68.9	53.8	15.1	8.6	59.2
Cedar Keys, Florida	59.0	48.7	10.3	38.2	53.9
Charleston, South Carolina	39.2	33.6	5.6	8.2	36.1
Chicago, Illinois*	50.4	31.4	19.0	3.3	41.4
Chincoteague, Virginia	39.0	33.3	5.7	14.0	34.9
Cleveland, Ohio*	35.4	33.0	2.4	22.6	35.6
Detroit, Michigan*	36.0	31.5	4.5	16.9	28.1
Duluth, Minnesota*	68.0	56.2	11.8	12.8	59.0
Eastport, Maine	37.4	31.1	6.3	19.0	30.4
Escanaba, Michigan*	69.7	55.1	14.6	18.0	59.9
Galveston, Texas	58.0	43.0	15.0	8.3	49.3
Grand Haven, Michigan	64.0	51.2	12.8	17.0	56.7
Indianola, Texas†	39.0	30.7	8.3	16.2	34.3
Jacksonville, Florida	37.9	32.7	5.2	12.7	35.1
Key West, Florida	40.0	31.0	9.0	18.0	36.9
Mackinaw City, Michigan*	51.3	38.1	13.2	15.8	46.3
Macon, Fort, North Carolina	64.4	55.1	9.3	17.5	57.3
Marquette, Michigan*	37.8	30.5	7.3	16.1	29.2
Milwaukee, Wisconsin*	49.8	43.0	6.8	52.6	44.8
Mobile, Alabama	41.4	37.9	3.5	10.0	34.9
New Haven, Connecticut	38.9	28.1	10.8	9.3	36.8
New London, Connecticut	55.0	53.9	1.1	39.2	52.6
New York City	63.1	47.1	16.0	9.7	57.2
Norfolk, Virginia	62.9	42.0	20.9	10.8	50.4
Pennacola, Florida	42.3	32.9	9.4	13.0	34.0
Portland, Maine	58.8	45.9	12.9	12.0	52.5
Portland, Oregon					
Sandusky, Ohio*					
Sandy Hook, New Jersey					
San Francisco, California					
Savannah, Georgia					
Smithville, North Carolina					
Toledo, Ohio*					
Wilmington, North Carolina					

* Observations interrupted by ice; see text. † Observations temporarily suspended.

WINDS.

The most frequent directions of the wind during March, 1886, are shown on chart ii by the arrows flying with the wind; they are also given in the tables of miscellaneous meteorological data. In the upper Mississippi and Missouri valleys, and on the Atlantic coast north of the thirty-fifth parallel the prevailing winds were northwesterly; in the lower lake region, Ohio Valley, south Atlantic and east Gulf states they were from southwest to northwest; in the middle and southern Rocky Mountain districts and in the west Gulf states they were variable; in the northern slope and northern plateau they were southwesterly; on the California coast they were westerly at all stations, except northwesterly at Cape Mendocino; in the north Pacific coast region they were from south and southwest, except northerly at Roseburg, Oregon.

HIGH WINDS.

[In miles per hour.]

Wind-velocities of fifty or more miles per hour were reported during the month, as follows:

Mount Washington, New Hampshire, 115, nw., 1st; 90, nw., 2d; 64, ne., 4th; 66, nw., 5th; 84, nw., 6th; 72, nw., 7th; 54, nw., 8th; 67, nw., 10th; 90, n., 11th; 82, nw., 12th; 83, nw., 14th; 52, nw., 15th; 60, nw., 16th; 80, nw., 18th; 86, e., 21st; 64, nw., 22d; 80, nw., 23d; 65, nw., 24th; 100, w., 25th; 101, nw., 26th; 75, nw., 27th; 78, sw., 29th; 69, w., 30th; 100, s., 31st.

Pike's Peak, Colorado, 60, nw., 7th; 74, sw., 10th; 70, w., 13th; 76, w., 14th; 54, w., 15th; 56, w., 16th; 68, w., 17th; 56, w., 18th; 52, sw., 19th; 50, n., 20th; 64, w., 24th.

Cape Mendocino, California, 70, se., 8th; 52, se., 16th; 54, nw., 18th; 62, se., 21st; 60, se., 22d; 58, se., 23d; 62, se., 31st.

Fort Buford, Dakota, 52, w., 24th.

Fort Sill, Indian Territory, 52, se., 11th.

Dodge City, Kansas, 52, s., 18th.

Fort Assinaboine, Montana, 54, w., 23d.

Sandy Hook, New Jersey, 60, nw., 1st; 60, nw., 2d; 56, nw., 23d.